THE NEW ENTRANCE TO THE GREEN PARK.

The gateway to the park, recently formed in Grosvenor-place, though too unpresuming to call for criticism, seems to us to display inattention which ought not in such a position to be visible. It is a simple rusticated gateway, of stone, with a cornice and blocking course (surmounted by a lamp in the centre), let into the existing brick wall; but instead of projecting, even a couple of inches before the face of the wall, which (without opening the door for any inconvenience) would have sufficed to shew the outline of the plinth, rustics, &c., it is actually placed rather behind it, and so has a very unfinished and inartificial appearance. A little thought would have made it much more satisfactory.

INSTITUTION OF CIVIL ENGINEERS.

THE HELDER CANAL.

At a meeting on the 9th inst., the president in the chair, a paper was read on the "Helder or Great North Holland Canal," by Mr. G. B. W. Jackson, Associate. This canal was constructed by the late Mr. J. Blanken, engineer, during the six years between 1819 and 1825, for the passage of frigates and first-class merchantmen, and extends from Amsterdam to Nieuwediep in the Texel. The state of the navigation through the Zuyder Sea, in the early part of the 17th century, having become so defective, in consequence of accumulated sand-banks and shoals, that camels were necessarily made use of to lift the vessels over the shallows at Pampas, thereby incurring both extreme loss of time and inconvenience, the Dutch Government deemed it necessary to consult Mr. Blanken on the possibility of remedying the evil. That engineer accordingly projected the above canal, which has three divisions, the summit level being only 3 feet 8 inches above the outlets. Its length is fifty-one miles. It is 123 feet 7 inches broad at top, 30 feet 10 inches at bottom, and 20 feet 6 inches deep. The pile-driving and boring experiment undertaken by him to ascertain the probability of success, shew that the original sea shore, being the only really hard ground in the north of Holland, is to be met with at 43 feet under the present surface of the ground; and as the foundations of the locks were laid nearly at that depth, the result of the experiments was considered to afford sufficient guarantee for the stability of the works. The character of the soil in that part of Holland is exceedingly treacherous, and it reflects great credit on our foreign neighbours that they were able to overcome the various difficulties with which they had to contend.

The constructions generally consist of floating and swingbridges, tide-locks, passage-locks, &c. The floating bridges are peculiar on account of their flexibility, consisting of two platforms, one fixed to each shore on piles, the end of each of which is worked by sets of double levers and resting on two boats, so that when the bridge is required to be opened, both boats are withdrawn, one towards each shore. The Willem lock is 297 feet 8 inches long, 51 feet 5 inches wide; the height of the lock walls being 32 feet 6 inches, and the gates being each 29 feet 5 inches by 29 feet 4 inches.

The total cost amounted to one million and a half pounds sterling. The time required by vessels to make the passage from Amsterdam to the Helder varies according to their size, and the means of haulage; fly-boats, with six relay of four horses each, making it in ten hours, whilst large East-Indiamen require two, three, and four days, according to the wind. The details of construction of the whole of the works were given very freely and with illustrative drawings. In the discussion which ensued, it was stated that the canal in this country which could be contrasted with that of the Helder, was the Caledonian Canal, which was projected upon a report by Watt, commenced by Jessop, and in a great part constructed by Telford, a few years previously to the Helder canal. The principal difference between the two consisted in the nature of the ground through which they were cut, the former being excavated entirely out of alluvial deposit, whilst the latter had to be cut out of hard gravel, and in some cases rock. An interesting account was given of the mode of forming the spot for the entrance-lock at the Inverness end of the Caledonian canal. The object was to carry the work out into deep water. A large mass of earth was deposited in the sea to the full extent intended. Upon this mound, a heavy load of material was laid to consolidate the mass. After settling for a considerable time, the upper mass was removed, the excavation was made for the lock-pit, and the construction was effected with comparative facility, and had endured much rough weather since, without any symptoms of failure. The superincumbent weight which was removed, being greater than any subsequent strain, there was no danger of the lock ever sinking.

On the 16th inst., this paper was continued, and treated principally of the art of building with fascine work, as practised in Holland and Germany.

The usual construction of these dykes was described to be, by sinking successive layers or beds of fascines or faggots of almost 30 inches thick by from 8 to 16 yards in width, and of proportionate length, weighted with gravel and stones mingled with clay, sea-weed, and silt. These layers were continued until they reached above the sea level, when the top was constructed of more solid materials and sometimes capped with brickwork, as the public roads were formed upon them.

The slopes of the faces of the dykes vary considerably: some of the low dykes are in section of the form of an arc of a circle of 6 to 10 feet chord and 10 inches to 1 foot versed sine, covered with fascine matting, staked down upon a clay-bed. Others have a base of 19 feet wide and 5 feet of a triangular section, also made up of fascines and stakes, secured by hurdles and wattling, with clay, peat, sea-shells, and sand, well rammed in, and then covered with turf. Others are formed with rows of piles, 16 feet long, with their heads 6 or 7 feet above the shore, joined longitudinally and laterally by waling timber, filled in and around with fascine beds and weighted with stone. Baskets filled with sand are also used in certain situations, as well as various modifications of all these kinds of protections. It was stated that these constructions were found to succeed better and last as long as stone, being at the same time about half the cost.

THE IPSWICH COMPETITION.

Sir,—The profession owe you many thanks for your excellent remarks in last week's Builder; I trust they will have due effect. The insertion of the following, sent by me to the *Ipswich Express*, may be useful.

I am, Sir, &c., A. B. C.

Sir,—Your worthy London contemporary The Builder, has, to my great satisfaction, been pleased to notice the *very liberal premium* offered by the Mechanics' Institution of this town for a design for a new building suitable to their purposes. Now, Sir, if you allow me, I would add one or two words to his excellent remarks, which, in my humble opinion, every one of the committee ought to be made to learn by heart.

In the first place let me dismiss the premium. *Five guineas* for a design. Well, we will reckon the architect or builder, for they are not particular which (in fact, for my own part, I don't believe they know the difference), sends in a design, comprising elevations, plans, sections, and perspective view. I will defy any one person to get them up under a fortnight. Now, allowing a sovereign for papers, colours, &c., there is *2l.* a week for the architect's remuneration—a sum that I have no hesitation in saying many of Messrs. Ransome's men are realizing. So much for the professional man's pay.

Again, they want a piece of ground 100 feet by 60 feet, covered for what? why for 1,600*l.*!! Now, the contents of that piece of land are nearly 670 yards, and at 30 feet high (the height required) I will defy the most speculating builder to erect a house of the commonest description under 5*l.* a yard. Thus we see *it is impossible to build an edifice any thing like the size they require under* 3,000*l.*

Cheadle Church.—In reply to an inquiry for views of this church, we have pleasure in pointing attention to a series of very good illustrations of it, from drawings by Mr. J. L. Williams in *The Illustrated News* of the 9th ultimo. They include an exterior and interior view, the rood-loft, brass screen, &c.

NOTICES OF IRON BRIDGES.*

The introduction of cast-iron for the construction of bridges commenced about the year 1779, when that over the Severn, near Coalbrook Dale, by Darby, was the first. It consists of a circular arch 100 feet span, and a versed sine of 45 feet, approaching nearly to a semi-circle. The height of the springing is 10 feet above low water, and the total height to the underside of the soffit is 55 feet. The banks of the Severn being high, this form accords well with them. It is formed by five ribs of cast-iron, with perpendicular spandril pieces, resting upon them to support the roadway. This, for a first attempt, is well adapted to the situation, and has answered the purpose. This was followed by the bridge over the Wear, at Sunderland. The design for this was said originally to have been made by Thomas Paine, the well-known political writer, and was cast at Rotherham, being intended for erection in America; but the materials were subsequently employed in constructing Sunderland Bridge, under the direction of Wilson, in 1796, the idea having been suggested by Rowland Burdon. The curve of the arch is that of a segment of a circle. The length of the chord or span is 200 feet, and the versed sine or rise 30 feet. The total height from low water to the underside of the soffit of the arch is nearly 100 feet. It consists of six ribs, each composed of 105 cast-iron radiating pieces, connected at the top and bottom by the circular pieces which form the curve of the arch; these ribs are united in their transverse direction by tie-pieces; the spandrils are filled in with cast-iron circles, touching each other at their circumferences, and supporting the roadway, which consists of a strong frame of timber, planked over and covered with a cement of tar and chalk, upon which a layer of marl lime-stone and gravel is placed. The centre deserves notice on account of the difficulty and confined nature of the situation, which rendered it necessary to preserve a constant passage for ships with their standing rigging; this was effected by a perpendicular framing resting upon piles in the bed of the river, with a sufficient opening on each side for the vessels. Upon the top of this perpendicular framing, the transverse framing or centre for supporting the arch was fixed, and answered its purpose well. Some time after the removal of the centre, the arch was observed to swerve bodily in a horizontal direction to the eastward, forming a curve having a versed sine of about 12 or 18 inches; if this had continued to increase, it would no doubt have soon occasioned the downfal of the structure; it was, however, very skilfully remedied by the introduction of transverse and diagonal tie-bars and braces, assisted by wedges and screws, so that ultimately the whole was brought back and secured in its original form and position, where it has since remained in a substantial state without alteration. The width of the bridge is 30 feet; the abutments are of stone, founded on rock; they are 24 feet thick, and from 42 feet to 37 feet wide. This bridge, for boldness of the design and construction, as well as for its elegance and lightness, must be considered a work of peculiar merit; particularly if the period in which it was constructed be remembered.

About the same time the bridge at Buildwas, across the Severn, by Telford, was erected. It consists of a single arch, segment of a circle, whose chord or span is 130 feet, and versed sine or rise 27 feet, the depth of the iron frame forming the arch being 3 feet 10 inches; it consists of three ribs, 18 feet wide from out to out, connected together in their transverse direction by tie-bars. The spandrils for supporting the roadway consist of vertical pieces, resting upon the segments forming the arch; the abutments are of stone. There is a novelty in the construction of this bridge worthy of remark. The two outer ribs consist of two segments of circles each struck from different centres, the crown of one terminating immediately below the roadway, the other at the top of the parapet, so that the platform forming the roadway is both suspended and insistent; the object of this being, it is presumed, to increase the depth of the truss supporting the roadway, and thus to add to the strength of the bridge: but it was un-

* From Sir John Rennie's address to the Engineers.